



Pulse™ Receiver

USER AND INSTALLATION MANUAL



Thank you for purchasing the Pulse Receiver.
Please read this manual carefully before proceeding with the installation.

i] WARNINGS

*This manual is intended for professional competent personnel adequately trained.
Installation and connections must be realized in accordance with Good Working methods and in compliance with the current Regulations. Bad installing could be source of hazard.
Before the receiver is connected, make sure that the plate details corresponds to those of the power mains and that there is a differential circuit-breaker and an adequate protection against overcurrents on the supply side of the system.
Fit an omnipolar disconnection switch with contact opening gap of at least of 3 mm.*

ii] RECOMMENDATIONS

For an installation complying to the safety standards it is mandatory to verify the following points:

- A. The connection of the appliance to the magnetothermic braker must be done with cable equipped with earth wire.
- B. The earth wire must be connected to the terminal block fixed to the metallic enclosure, according to the wiring diagram on fig. XX . This diagram secures a Protection Earth wiring (PE) . The connection of the metallic box cover to the earth protection must be realized with a faston equipped wire (see connection diagram and locate the fixing point on the cover).
- C. The connection of the bottom of the metallic box to the Protection Earth is realized directly by the terminal block.
- D. The system must be installed on an electric installation conform with the Regulations in force which must include a circuit break device.
- E. Before the setting up check the electrical connection to the Earth of all the enclosure parts.
- F. The cable coming from the circuit braker must be firmly fixed.

More details to respect

- A. During a regular working of the PULSE Receiver, the box must be closed and locked with the proper key, to avoid any contact with parts under voltage.
- B. For all the maintenance operations and setting up the system must be disconnected before to open the cover.
- C. The contact with parts subject to the Mains is interdicted : this danger zone is indicated by the sticker here below.
- D. In case of the installation of a battery, respect the recommended specifications : 12 V / 7Ah
- E. Respect the polarity of the cable when connecting the battery.

Certification

This product is certified according to the following European Directives:

- 2004/108/CE : Electromagnetic Compatibility Directive.
- 2006/95/CE : Low Voltage Directive.
- 99/05/CE : R&TTE Direttive,

if and only if the instruction provided by the manufacturer are followed.

Possible differences from the manual can bring to serious safety or functioning problems.



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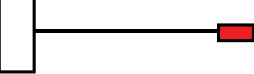
1] INTRODUCTION

PULSE Receiver is a innovative multiuser receiver with double technology ID (RF & wiegand). It's suited to manage premises with common entries as parkings, garages, condominiums, basins making use of a remote control or a passive tag card. Remote management of the data base by using a GSM or PSTN modem card (optional).

2] TYPES

P/N	Housing	Description
RECPULUSB	PVC Enclosure	PULSE RECEIVER 485 OR USB CONNECTION
RECPUL	PVC Enclosure	PULSE RECEIVER MODEM CONNECTION
	PVC Enclosure	PULSE RECEIVER LAN CONNECTION
	Metal Enclosure	PULSE RECEIVER 485 OR USB CONNECTION
	Metal Enclosure	PULSE RECEIVER MODEM CONNECTION
	Metal Enclosure	PULSE RECEIVER LAN CONNECTION

3] OPTIONAL SYSTEM ACCESSORIES

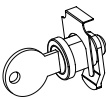
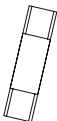
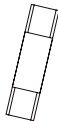
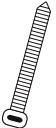
			
TX MASTER	TX STINGRAY	TX MONARCH	TX FOBS & CARDS
			
GSM ANTENNA	MODEM PSTN	BACKUP MEMORY OLD-STYLE	USB DEVICE CABLE
			
PROG. TX CABLE	12V 7Ah ACCUMULATOR	ANTENNA 433 MHz	MODEM GSM
			
I/F LAN FOR PULSE	CAETHRA: RS232-TCP/IP		

P/N	Description
TRATSMASPRO	TX MASTER
TRA433TSPWXV	TX STINGRAY
TRA433TSPWXK	TX MONARCH
	TX MANGO FOB
	TX MANGO CARD
	ANTENNA GSM
	MODEM PTN
MEMDRIREC800	BACKUP MEMORY OLD-STYLE
	USB DEVICE CABLE
	PROG. TX CABLE
ATWIERECSEA433	ANTENNA 433 MHz
	MODEM GSM
	12V 7Ah ACCUMULATOR
	CONVERTER RS232-TCP/IP

4] TECHNICAL SPECIFICATIONS

- Radio receiver 433,92 MHz in AM/ASK;
- Keeloq® Hopping code security system;
- 2 inputs for 26 bit-wiegand readers;
- 4x24VA output relays : 2 outputs (C-NO) + 2 outputs (C-NO-NC);
- 2 inputs for exit-buttons (C-NA);
- Input USB Device for PC connection;
- Slot for GSM modem card [9600 Baud] with external antenna or PSTN modem card w/RJ45 connector ;
- I/F RS-485 for network connection;
- Up to 64 devices in multidrop;
- Log Events / Users memory;
- Max Users : 4158 (with 300 events);
- Max Events : 5455 (with 100 users);
- Input for transmitters re-programming probe w/RJ11 connector;
- Connector for memory expansion [6 x 512 K];
- Connector for old-style backup memory;
- Connector for backup memory [4 x 512 K];
- Connector for firmware update special card;
- Real Time Clock with lithium backup battery CR2032;
- Power supply 230 Vac - 24 Vac/dc;
- Input 12 Vdc for 12V / 7Ah backup battery with embedded battery charger.
- Auxiliary output 5 Vdc - 150 mA

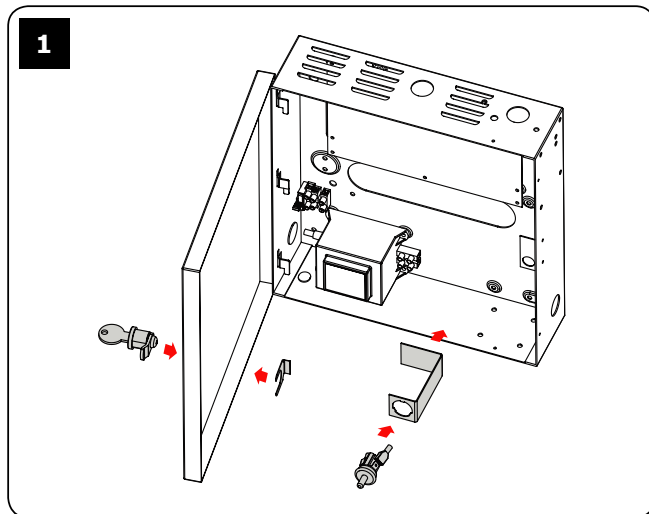
5] MOUNTING KIT

				
	Lock with key* with metal case only	Fuse T3,15A 250V	Fuse T1A 250V	Screws + plugs
PULSE	1	1	1	4

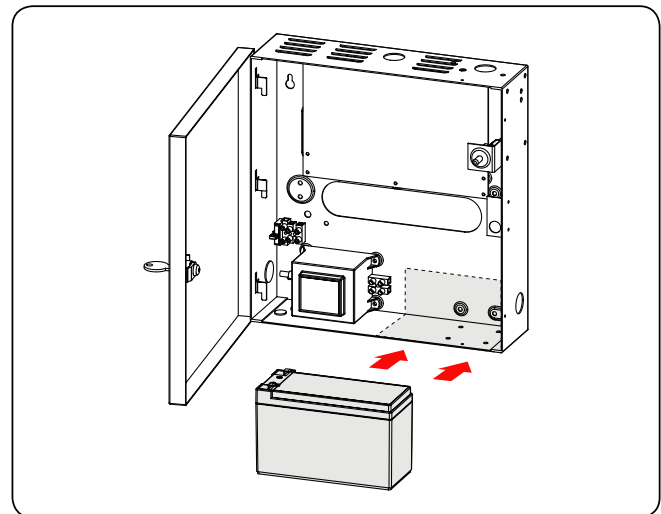
6] MAIN FEATURES

- Operating mode Stand-alone / Network / modem;
- User data base management [memo, delete, multiple memorization, enable / disable]
- Detailed user information data-base;
- Relay operating mode [momentary, latch, delayed]
- Time zone management [10]
- Event log file
- Antipassback [for wiegand inputs only]
- Detailed setting for multidrop 485 network
- Detailed settings for modem GSM / modem PSTN calls (optional)
- Site password
- PC connection password
- 2 security levels [configurator, user manager]
- Site management software for Windows [XP, Vista, Windows 7]
- User management in stand-alone with local keyboard or with Master transmitter

7] MOUNTING INSTRUCTIONS

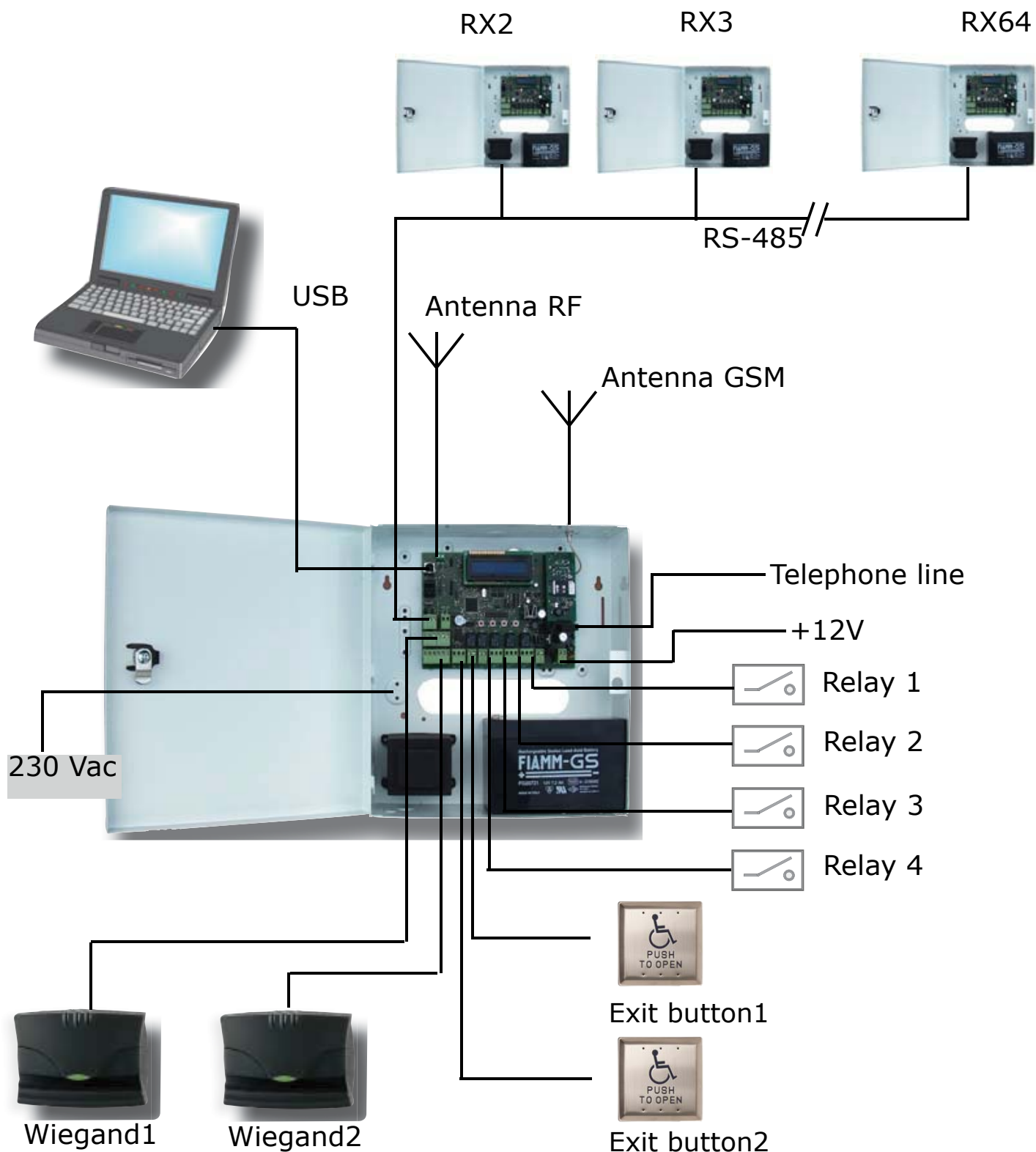


Install the elements of the lock to complete the mounting of the PULSE enclosure.
Fix the box vertically using the holes available on the bottom.

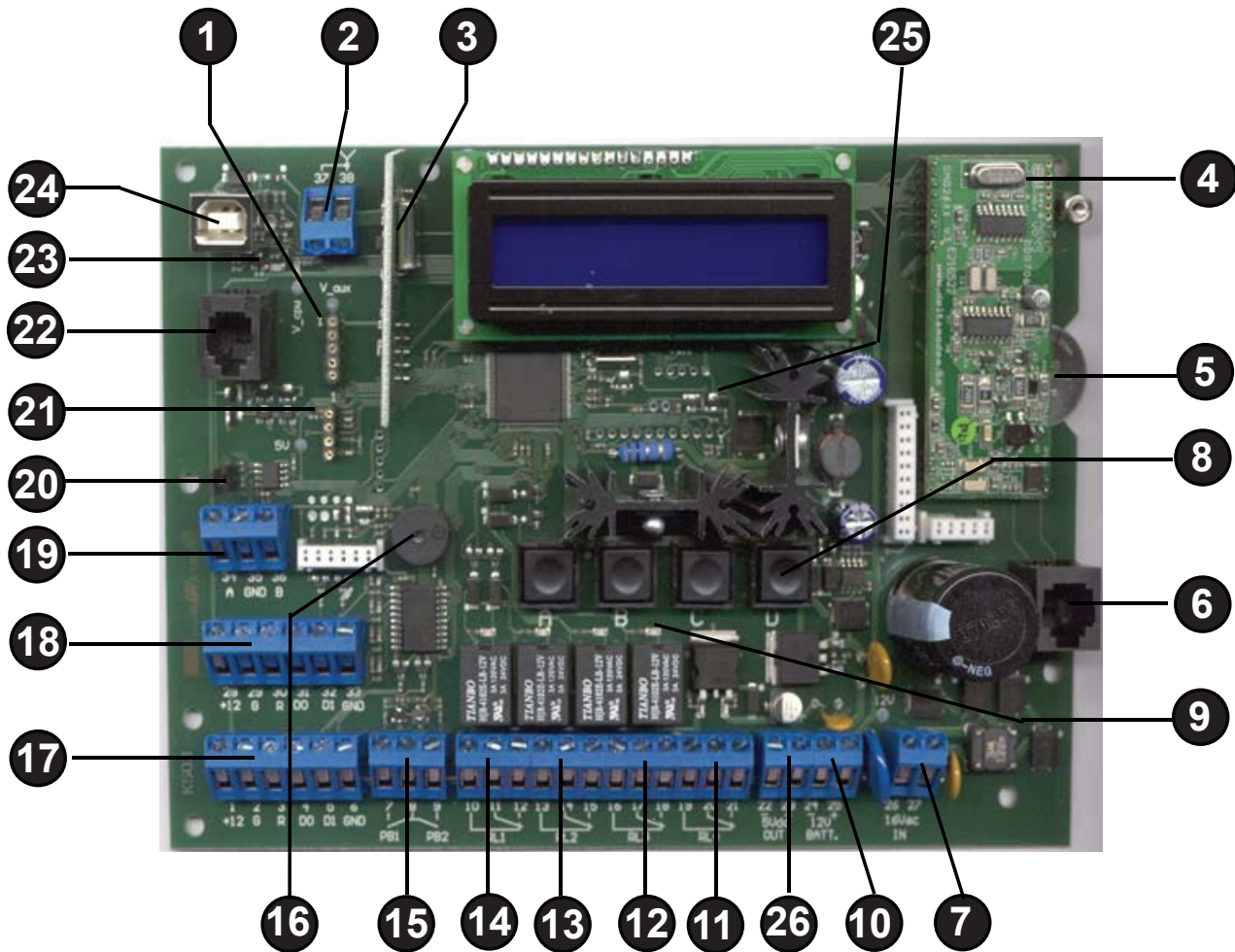


For the installation of the backup battery (Ref. pag. 4) place the battery vertically and leaned on the right side of the box.
Then insert the faston on the battery contacts making attention to respect the right polarity and connect them to the main board at the terminal block 10 (See pag. 9).

8] WIRINGS

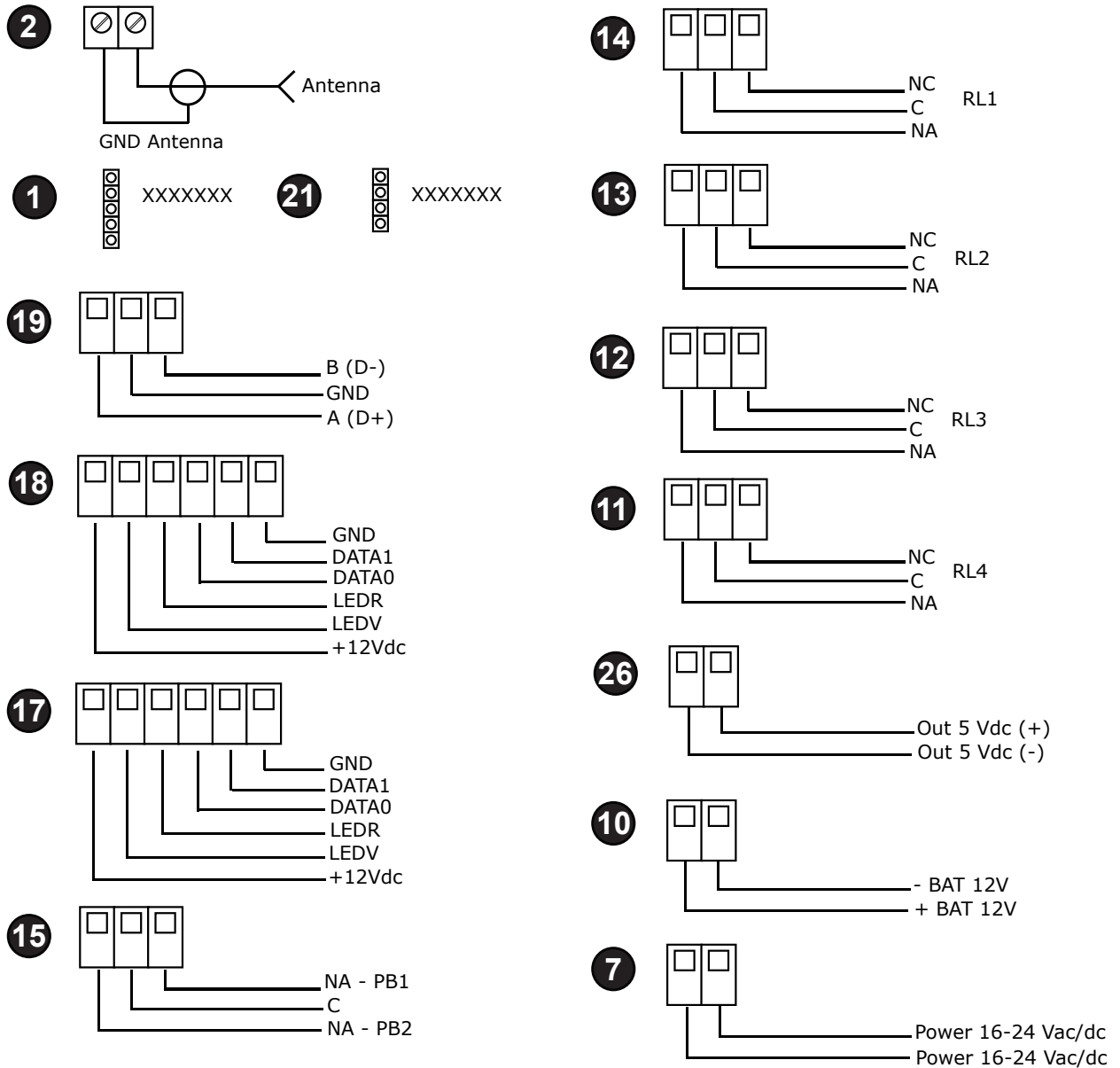


9] LAYOUT

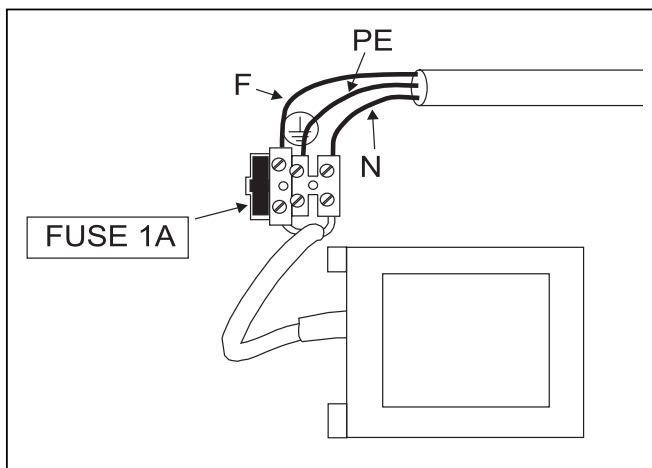


- | | |
|---|--|
| 1 - Backup memory connector | 14 - Output C-NO-NC relay RL1 |
| 2 - Input for 433 MHz antenna | 15 - Input NO-C-NO for exit-buttons PB1, PB2 |
| 3 - RF receiver card | 16 - Buzzer |
| 4 - PSTN module (optional) | 17 - Input Wiegand reader-1 |
| 5 - CR2032-3V backup battery | 18 - Input Wiegand reader-2 |
| 6 - RJ45 connector for telephone line | 19 - I/F RS-485 |
| 7 - Input for power supply 12/24 Vac/dc | 20 - Jumper for 485 termination --> 10.2 |
| 8 - 4 push-buttons (A,B,C,D) | 21 - Backup memory connector (old type) |
| 9 - Relay activation led | 22 - RJ11 connector for TX programming probe |
| 10 - Input for 12V backup battery | 23 - USB Signalling led |
| 11 - Output C-NO-NC relay RL4 | 24 - USB Device connector |
| 12 - Output C-NO-NC relay RL3 | 25 - Power led |
| 13 - Output C-NO-NC relay RL2 | 26 - Auxiliary output 5Vdc - 150 mA |

10] ELECTRONIC CARD CONNECTIONS



10.1] CONNECTION TO MAINS - 230Vac



10.2] RS-485 LINE TERMINATION

In a RS-485 network set the termination jumper **CLOSED** in the PULSE at the end of the line and **OPEN** in the PULSE intermediate.

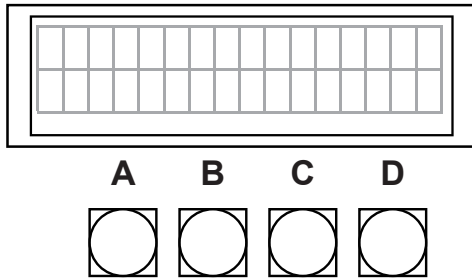


**PULSE END OF LINE:
JUMPER CLOSED**



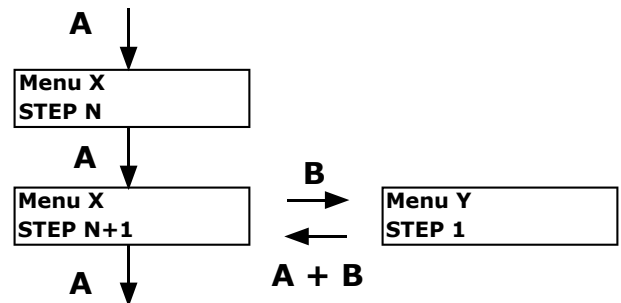
**PULSE INTERMEDIATE:
JUMPER OPEN**

11a] PUSH BUTTON & LCD DISPLAY



A = Scroll menu B = Confirm
C = Change visualization (H, F, D)
(Facility+decimal / Hex / Facility+S/N,)
D = A + B = Enter into main Menu / exit from option

The push buttons A and B have the same function of the Master Transmitter keys



2 different access levels to the menu :

A = CONFIG MENU
B = OWNER MENU

with 2 different passwords.

The default password is 11111 for both levels.

The **Configuration password** is used to access to the installation, parameters setting and maintenance options.

The **Owner password** enable the access to the event memory and more options (date / time setting).

Pushing A+B simultaneously displays the type of menu choice and then the corresponding password request. Access to the main menu with a MASTER transmitter, by pushing simultaneously the keys A + B, or pushing the buttons A + B of the main board or simply using the button D.

Scroll the menu options using the key A (LEFT) of the Master transmitter or the button A of the board.

Make the choice using the key B (RIGHT) of the transmitter or the button B of the board.

Return to the upper menu by pushing simultaneously A+B or the button D of the board.

The key A can be used to increment the digits when setting a number (a password for instance) or to scroll the options of a parameter.

The key B is used to confirm the choice and shift to the next number / parameter.

11b] GETTING STARTED

At the first power-up the receiver allows to set-up the memory structure, divided into User zone and Events zone. The partition by default is : 3956 Users and 556 Events.

USERS 03956 XXXXX
EVENTS 00556

By changing the number of the users, the system calculates automatically the number of events allowed.

11c] VISUALIZATION : Symbols

Press several times the button C to change the visualization of the Serial Number (SN) and the Facility Code (FC) for the remote control and the serial number for the Tag wiegand.

Symbol	RF TRANSMITTER	TAG WIEGAND
-	SN=10406 FC=001	WG2 = 10750328
h	SN=000128A6	WG2 = 00A4096E
f	SN=001 10406	WG2 = 164 02414
d	SN=00075942	WG2 = 10750318

11d] CLOCK SET-UP: Enter in the menu Owner.

PULSE HH:MM:SS
DD/MM/YYYY

NOTE: It's necessary to change manually or through the PC the internal clock when there is the change WINTER TIME / SUMMER TIME

11e] MEMO TX MASTER

You can access to the main menu only using a Master Transmitter already memorized.

If it isn't the case, push simultaneously the keys A+B of the Master transmitter. The display shows the following message:

A + B

SN=09127 FC=001
Store Master?

B

Executed OK

Press the key B to confirm.

12] MENU

Pushing the button D of the board (or even simultaneously the keys A+B of a Master transmitter memorized) you can access to the main menu:

A = Config Menu
B = Owner Menu

Config Menu
Password 00000

Owner Menu
Password 00000

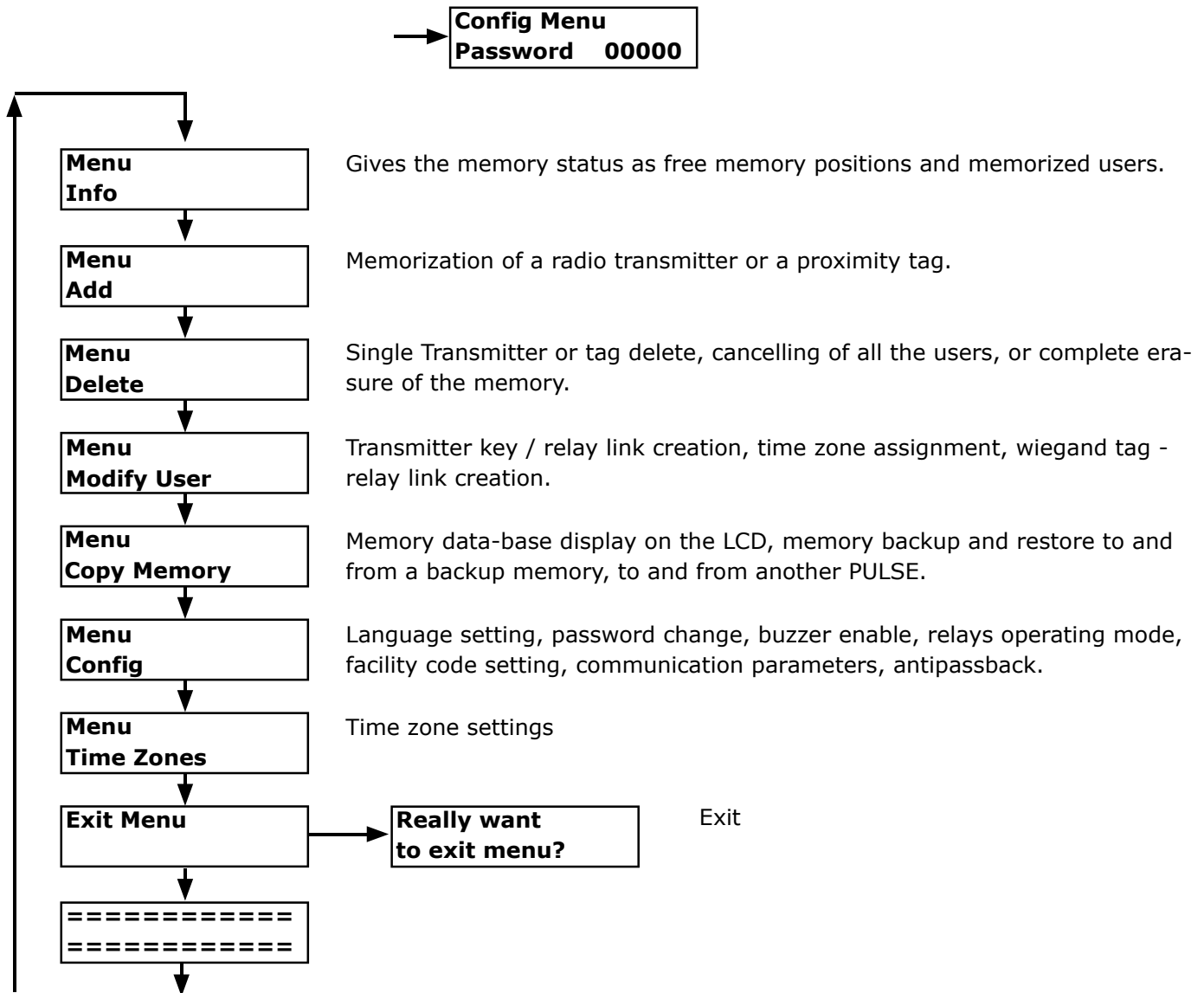
Opening menu

Password request to access the menu Config

Password request to access the menu Owner

13] CONFIG MENU

Selecting the option A of the opening menu you are requested to enter the password. Enter the password making use of the keys A and B of the board or of the transmitter Master. The key A increases the digits, the key B shifts the cursor left.



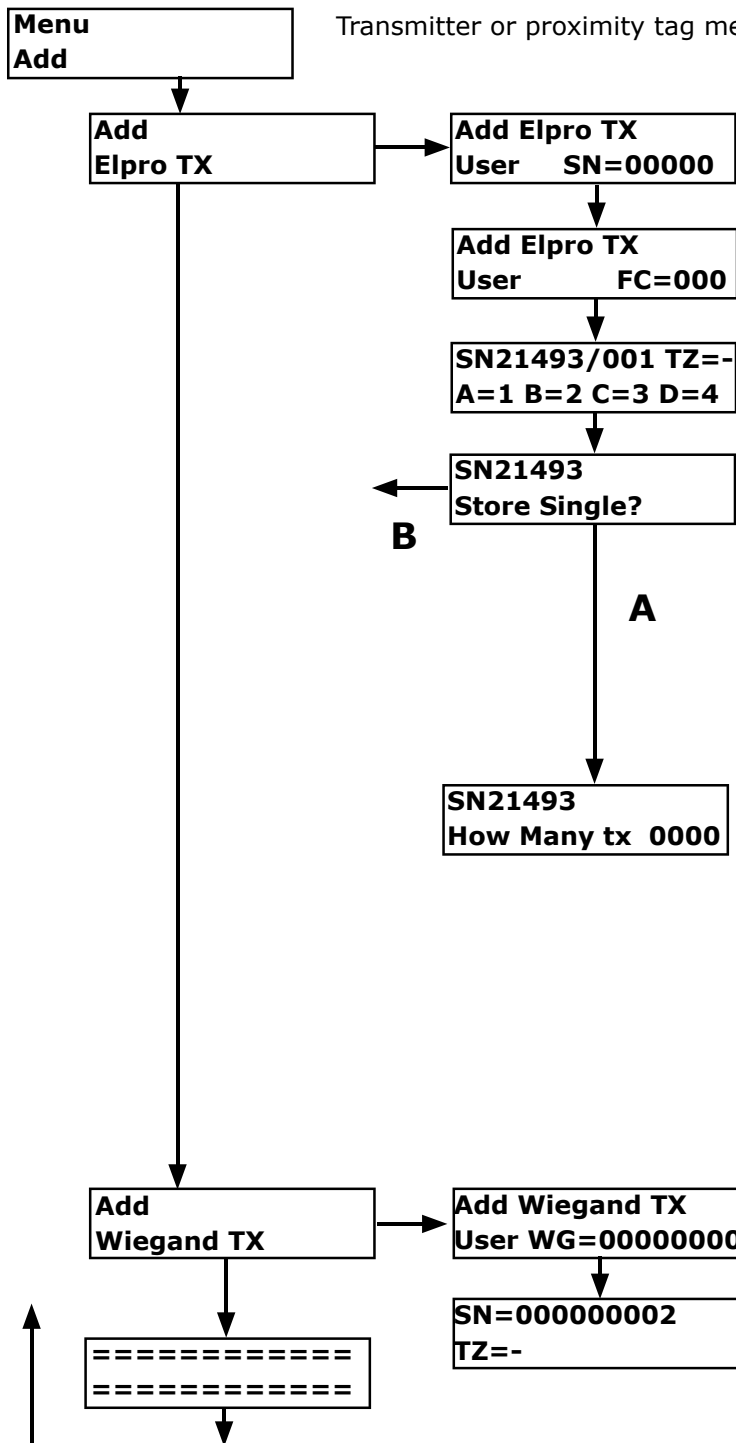
13.1] MENU INFO

Example:

Free Memory 3950
User Stored 0002

In this example are available 390 memory locations and have been memorized 2 users.

13.2] MENU ADD



Memorization of a radio transmitter

Type in the transmitter S/N making use of the buttons A and B of the board or activate the right key (B) of the transmitter : it's own S/N will be displayed automatically. Confirm with the button B or the key B of the transmitter. Then you are required to enter the Facility code. Type in the 3 digits and confirm.

Assign the time-zone desired (0..9) and select the relay associated to each transmitter key.

The Time zone «-», proposed as default, doesn't assign any time zone and gives permanent access. By default is proposed to assign the relay K1 to key A, relay K2 to key B, relay K3 to key C and relay K4 to key D.

The symbol «-» doesn't assign any relay to the transmitter key.

Multiple transmitter memorization

Answering NO with the button A to the question «STORE SINGLE ?» you can proceed with multiple memorization. You are requested to enter the number of units to memorize.

At the end N transmitters are memorized, with starting S/N as the one typed.

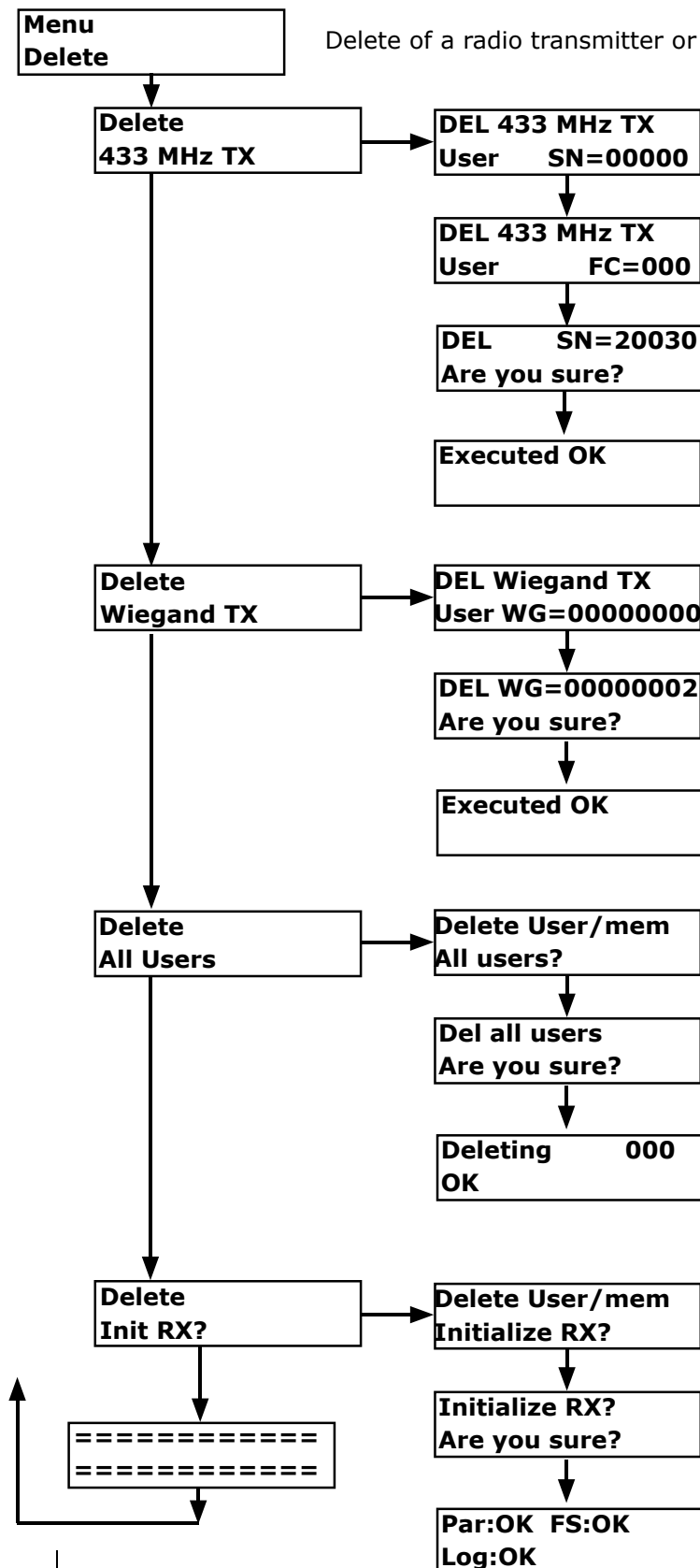
Then you come back to the menu Add.

Tag wiegand memorization

Type in the serial number of the tag, making use of the buttons A and B or approach the tag to the reader : its own S/N is shown by the display. Then confirm with the button B.

On the next screen specify the Time-zone and confirm. Then you come back to the menu Add.

13.3] MENU DELETE



Delete a radio transmitter

Type in the S/N of the transmitter to delete and press B.

Specify even the Facility code and confirm.

At the end the program returns to menu Delete

Delete a proximity tag.

Type in the S/N of the tag to delete and press B.

At the end the program returns to menu Delete

Delete all users.

Delete all the transmitters and the tag memorized.

Confirm with the button B

At the end the program returns to menu Delete

Memory initialization.

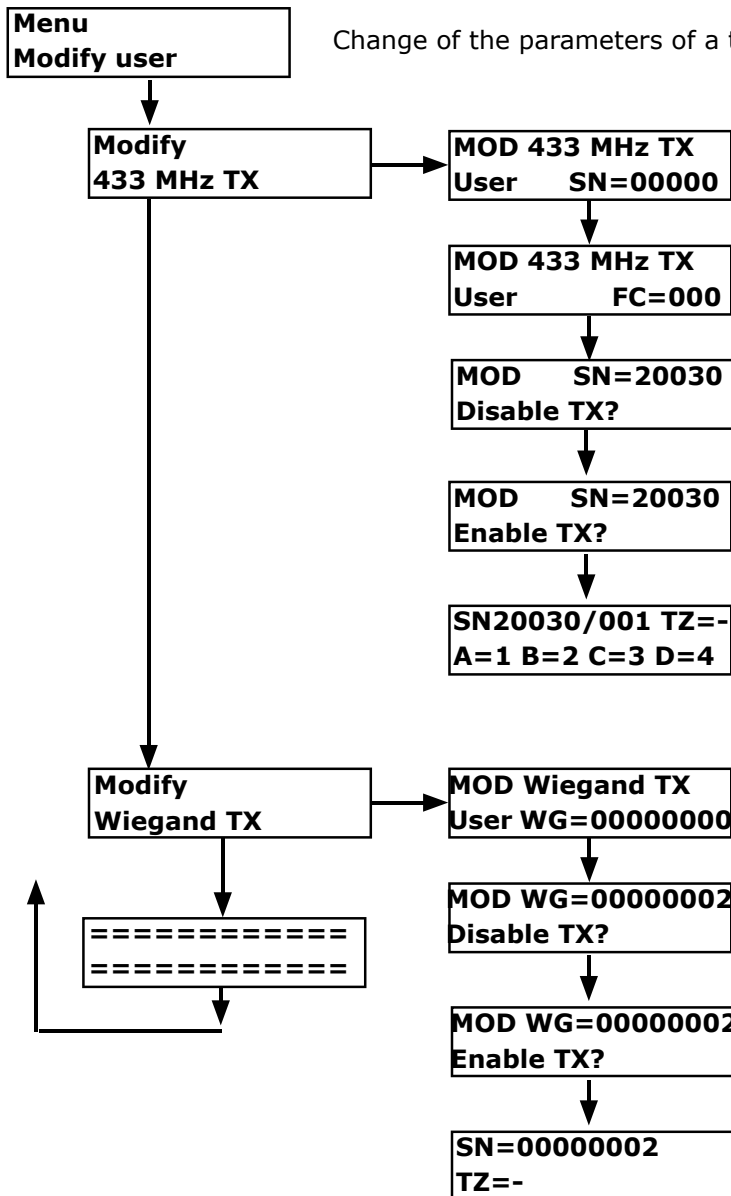
Delete all the transmitters user and master and the tags.

Delete the event log file.

Delete the time zones.

Reset to the default value all the parameters (except the user password).

13.4] MENU MODIFY USER



Change of a radio transmitter

Insert the S/N to change or push the key B of the transmitter.

Type in even the facility code and confirm

By answering YES (with the button B or the key B of the transmitter, the transmitter is disabled and the program skips to the next screen.

If the transmitter is disabled the program suggest to enable it and with a confirmation the operation is accomplished.

By answering NO the program suggests to change the relay settings or the time zone.

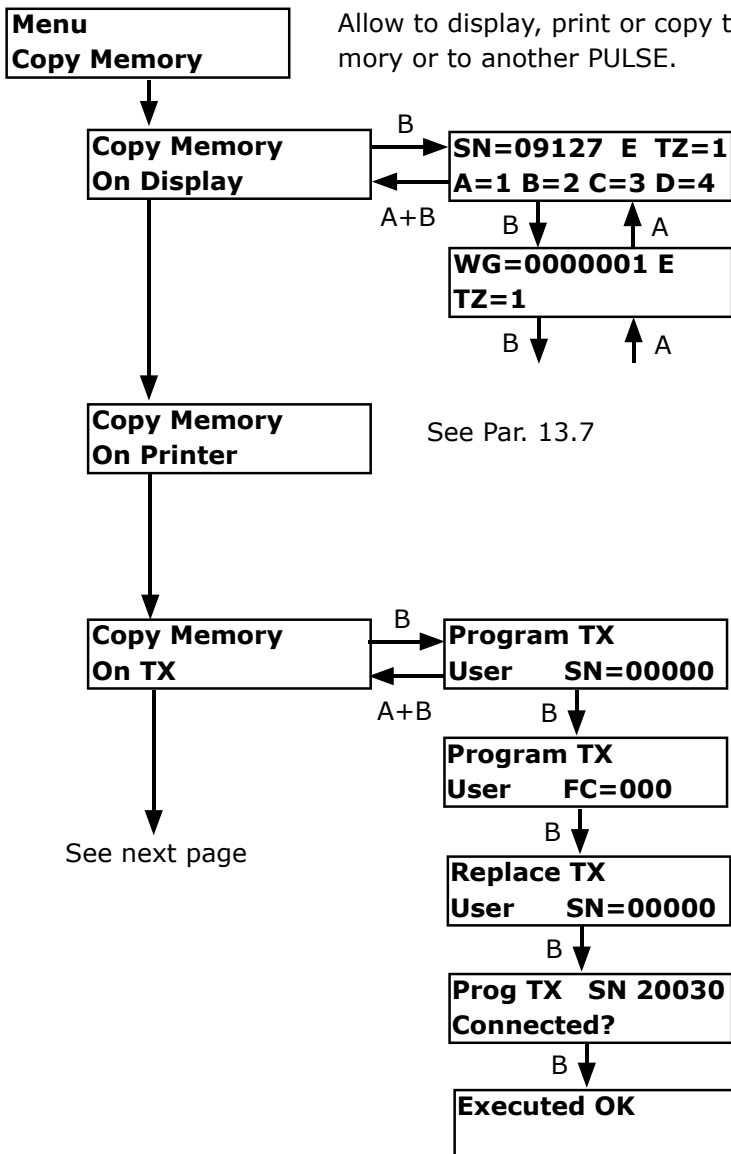
Change of a proximity tag

Insert the S/N to change and confirm with the button B.

If the tag is enabled, the program suggest to disable it, if the tag is disabled, the program suggests to enable it.

The next screen invites to change the time zone.

13.5] MENU COPY MEMORY



Display on the LCD screen the memory content

With the button A you scroll down the lines, with the button B you scroll up the lines. Push A+B to come back to the upper level.

On the screen appear both the transmitters and the tag memorized with the corresponding settings.

Memorizes a certain S/N onto a radio transmitter, replacing the existing S/N.

For this option it is needed the probe [p/n = PROG TX CABLE].

Plug-in the cable of the probe on the corresponding connector, press the nails of the probe on the contacts of the transmitter (see fig. 1) and push B

If the connection is OK and the transmission is successfully, the message «Executed OK» appears on the screen and the procedure ends.

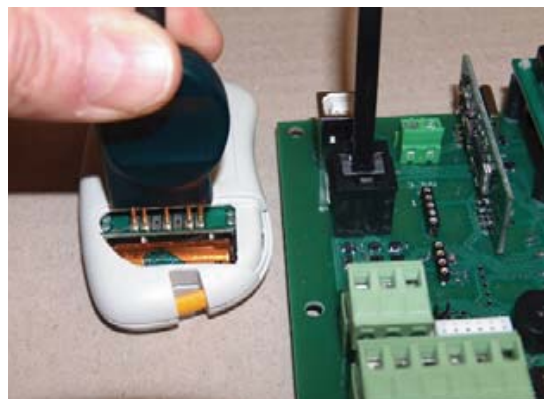
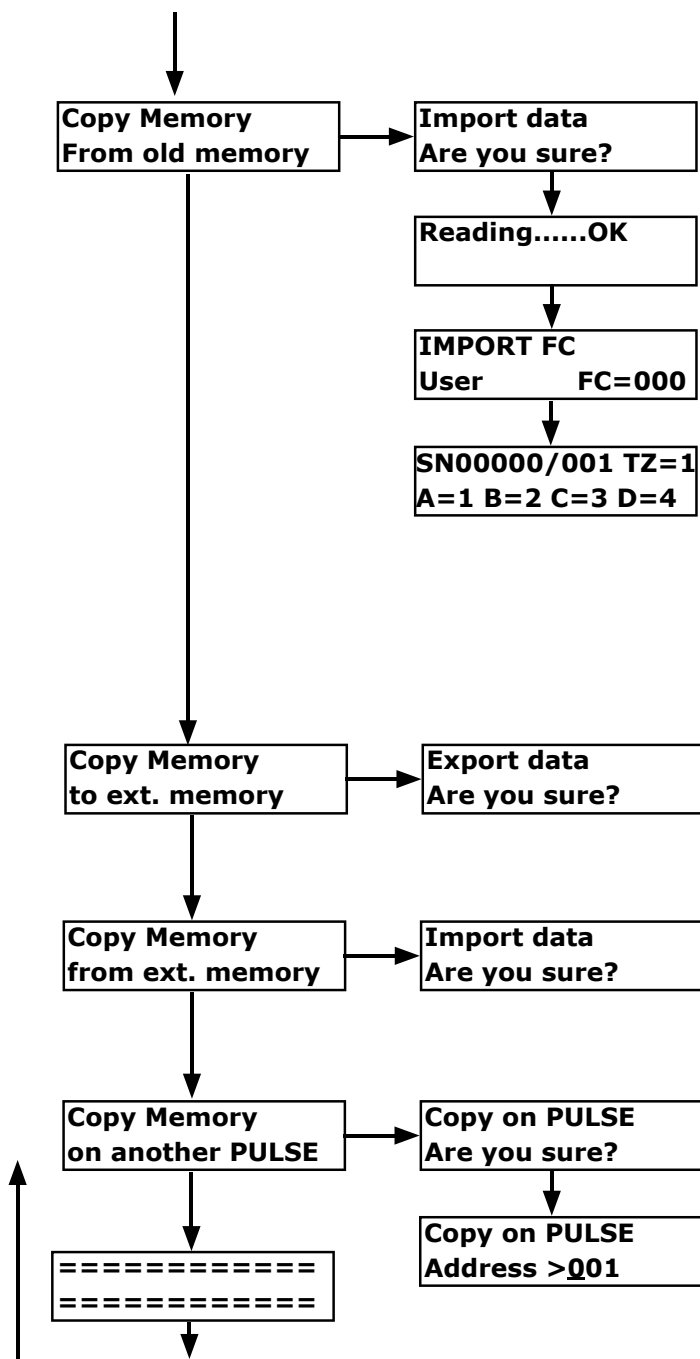


Fig. 1

13.6] MENU COPY MEMORY (follows)



Restore the memory data-base from an external memory into the internal memory

With this option it is possible recover the data saved in a memory compatible with the Multiuser receivers of the Series K (K5, K8, K8P, K16P).

The procedure replaces the internal data with the backup memory data.

Plug-in the backup memory on the connector as shown in Fig. 2



Fig. 2

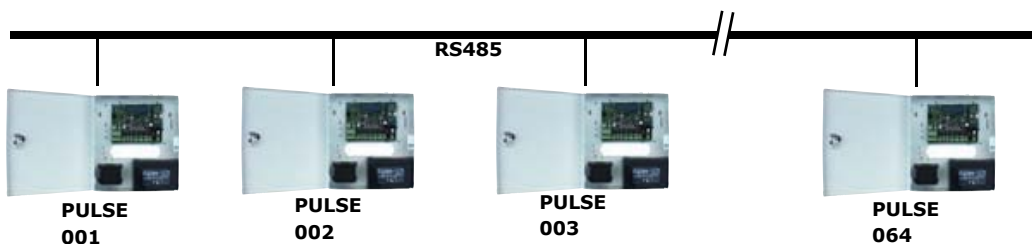
Backup or restore of the memory data-base on or from an external memory

With this option it is possible to copy the memory content into an external memory or restore the data saved from an external backup memory into the internal memory.

Copy the internal memory content to another PULSE, connected through RS-485

With this option it is possible to copy the memory data-base to another PULSE connected in RS-485.

In this case it is necessary to insert the address of the target PULSE (different from the PULSE source).



13.7] MENU COPY MEMORY : COPY ON PRINTER

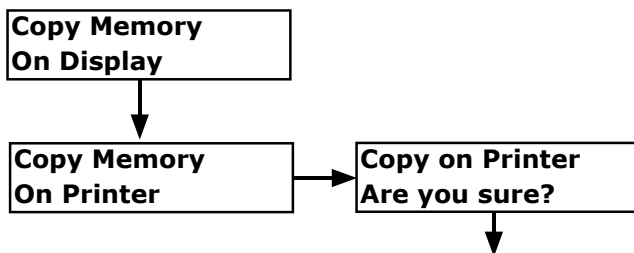
Sends to print the memory content on the USB port

With this option it is possible to send the memory content (users or event log) to the USB port and display them by using a communication software (as. HyperTerminal).

Proceed as follows:

- 1) Set the USB port of PULSE in mode PRINTER and select the communication speed [Baud-Rate] from 1200 to 115200 Baud (See. Par. XXX).
- 2) Launch the HyperTerminal and set the serial communication parameters (Name, Port, Speed in bit/sec, and so on).

3A) Print of the User memory.



In this case the following information are printed:

- Password
- Facility codes (2 types)
- Time zones (week days, subzones)
- User N, Type, FC, SN, Status, Relay, TZ, User name.

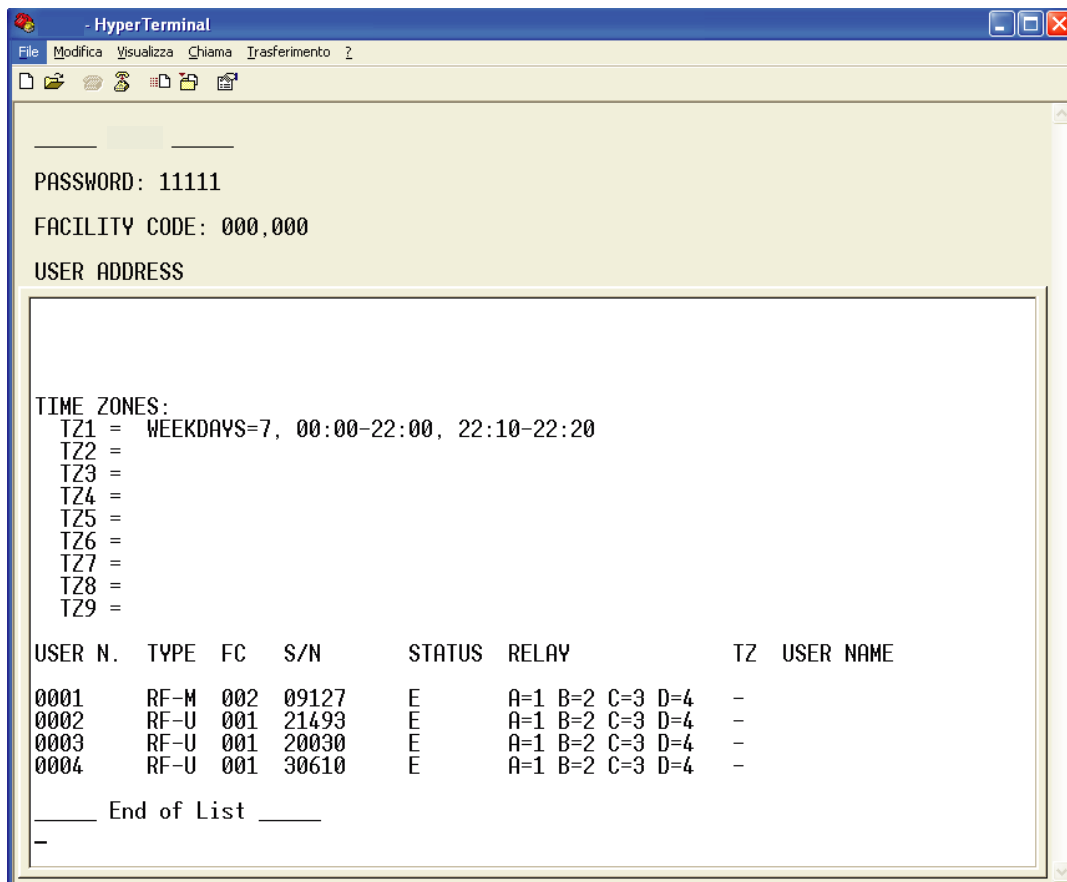
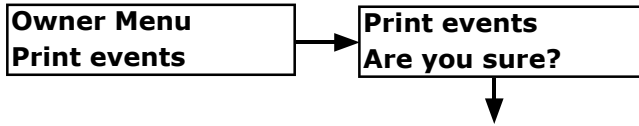


Fig. 3

3B) Print of the event log

The print of the event log can be done from the menu B (Owner)



In this case are sent to print all the events registered on the event memory of the receiver marked with date / time, type of the event. Also in this case the complete log file is sent to the USB port using the communication parameters previously set in the menu COM.

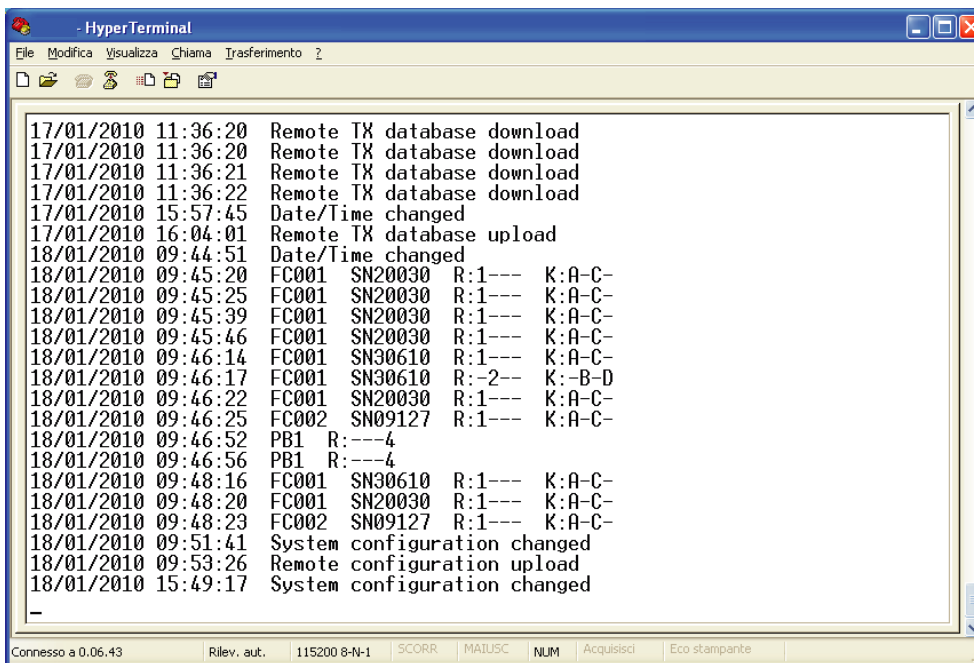
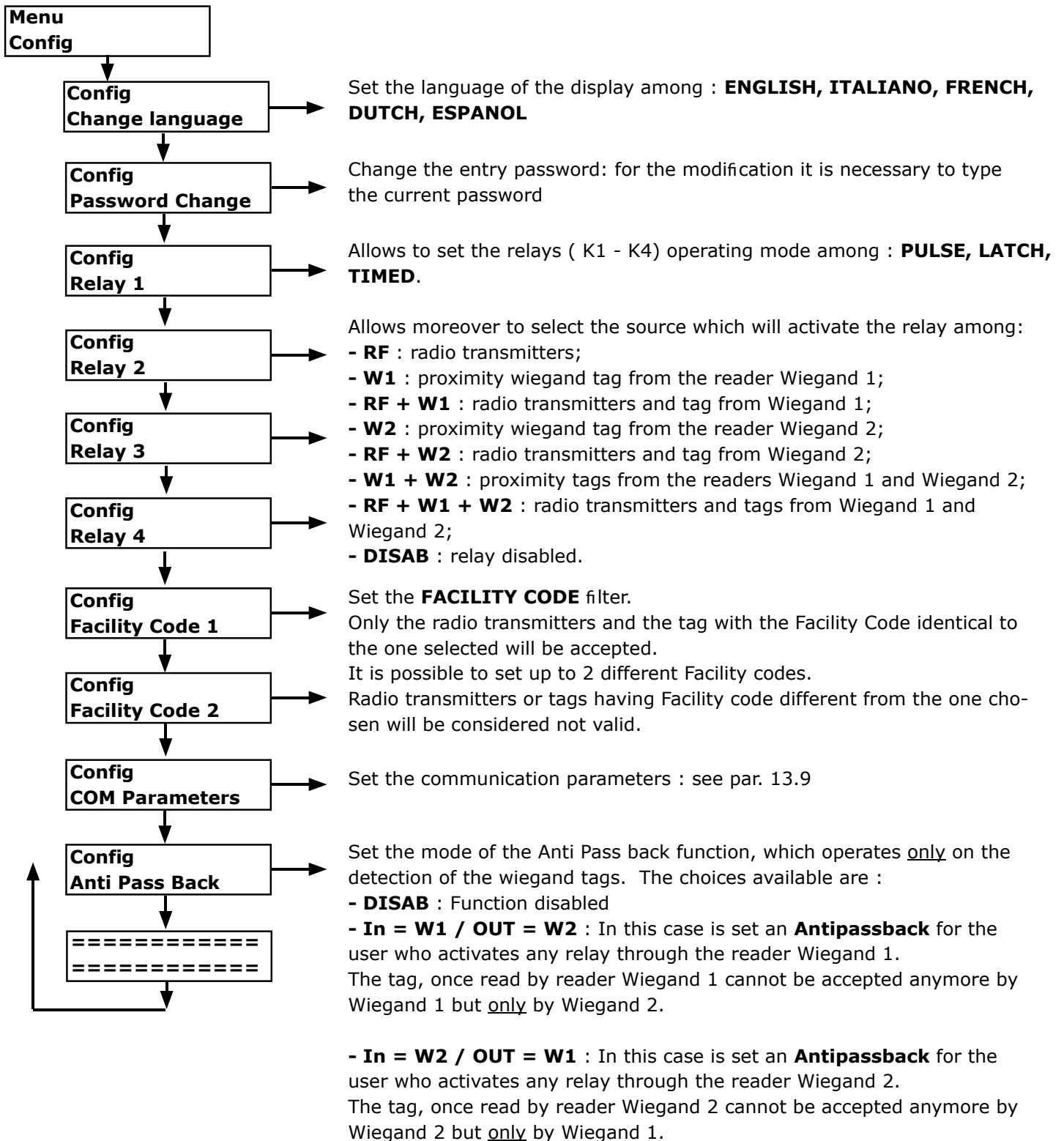
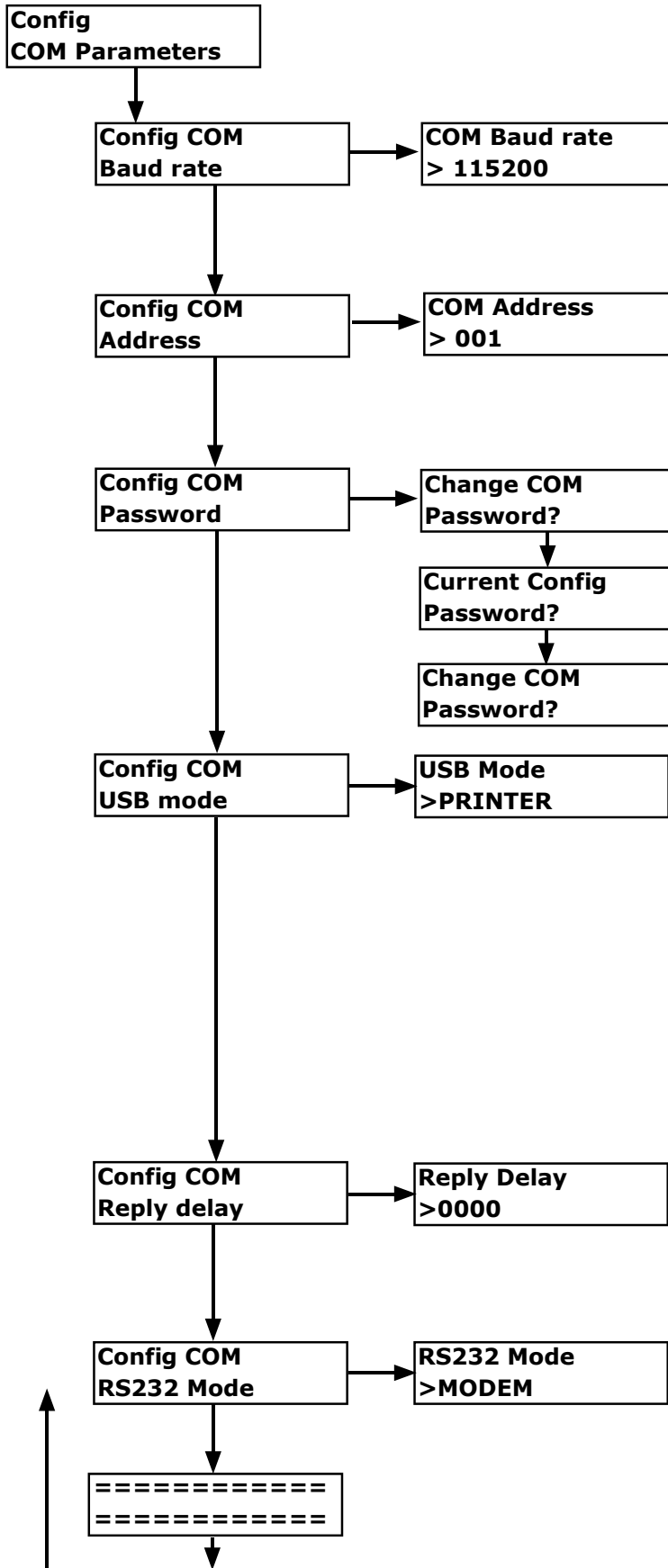


Fig. 4

13.8] MENU CONFIG



13.9] MENU CONFIG : COM PARAMETERS



Set the serial communication speed (baud rate) for the RS-485.

The baud rate can be chosen among : **1200, 2400, 9600, 19200, 38400, 57600, 115200.**
The default value is 38400 BAUD.

Set the address of each PULSE unit on the RS-485
Can be set up to 64 different addresses.
The default address is 001. The address 000 is not allowed. Addresses higher of 200 are not accepted.

Set the serial communication password.
For its modification it is necessary to insert the current one.
The default password is 11111.

Set the operating mode of the USB port
- **NET**: The port USB is used for the serial communication between PC and PULSE.
PULSE can act as gateway for the connection between the PC and another PULSE connected through the RS-485

- **PRINTER**: Allow to download the memory contents (users or event log) through the USB to a PC screen.

- **MODEM**: PULSE becomes transparent and allows the PC to communicate directly with the Modem (GSM o PSTN) inserted on the mother board.

- **DISAB**: The USB port is disabled
PULSE inserts a default delay of 50 mS on the reply times of PULSE along the RS-485 to balance the physical transmission propagation times.
It is possible to change this time inserting the proper value (expressed in mS).

RS232 operating mode

- **MODEM** : (default) set Modem if the modem card (GSM o PSTN) is connected

- **LAN** : set LAN if is inserted the card IF-LANE

14] OWNER MENU

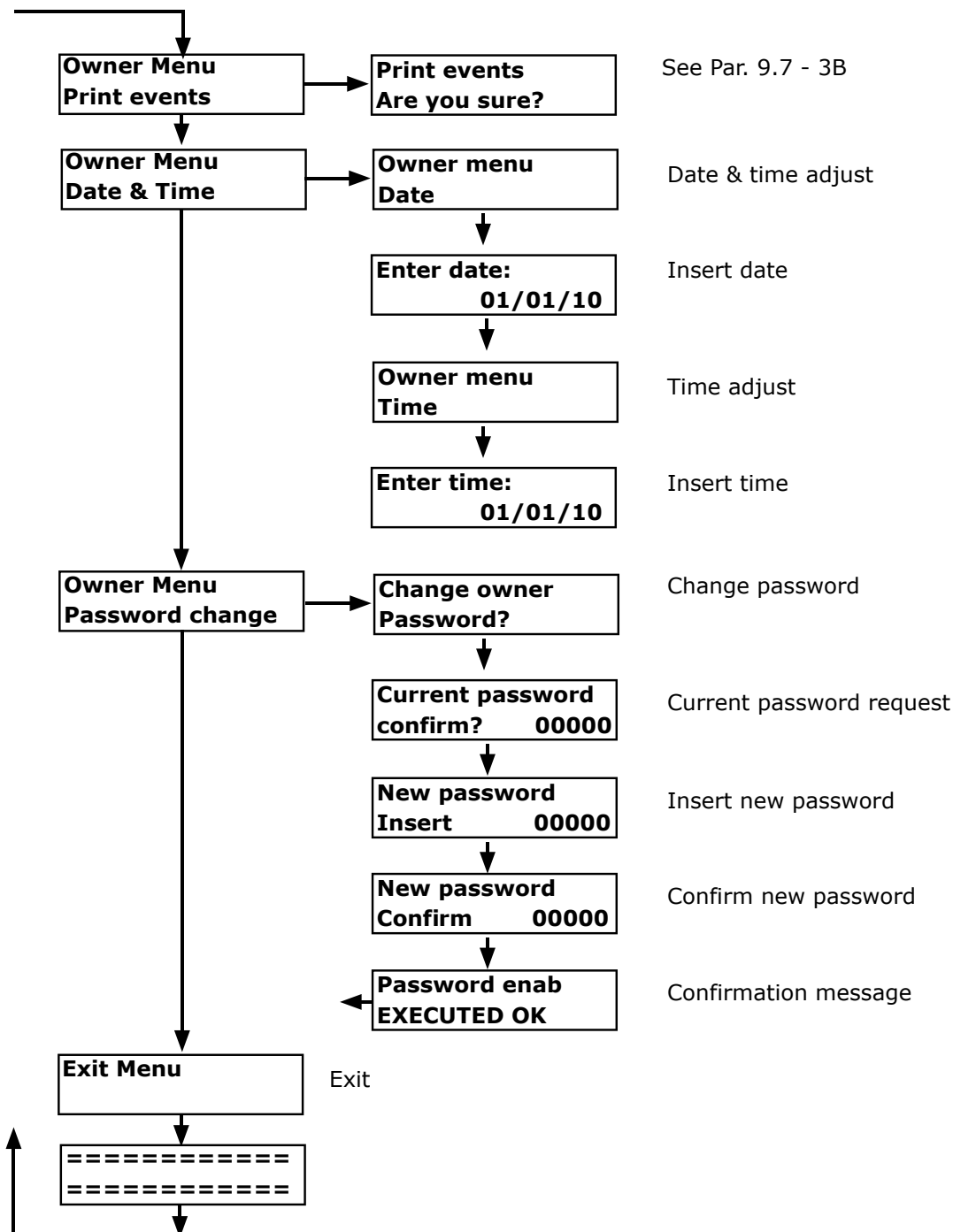
The menu OWNER can be accessed with a password different from the menu CONFIG.

The Owner, in this way, can have a different authorization level and execute the following operations :

- Print to USB the event log file
- Adjustment of the internal clock [date / time]
- Change of the personal entry password.

The default entry password for for this menu is 11111.

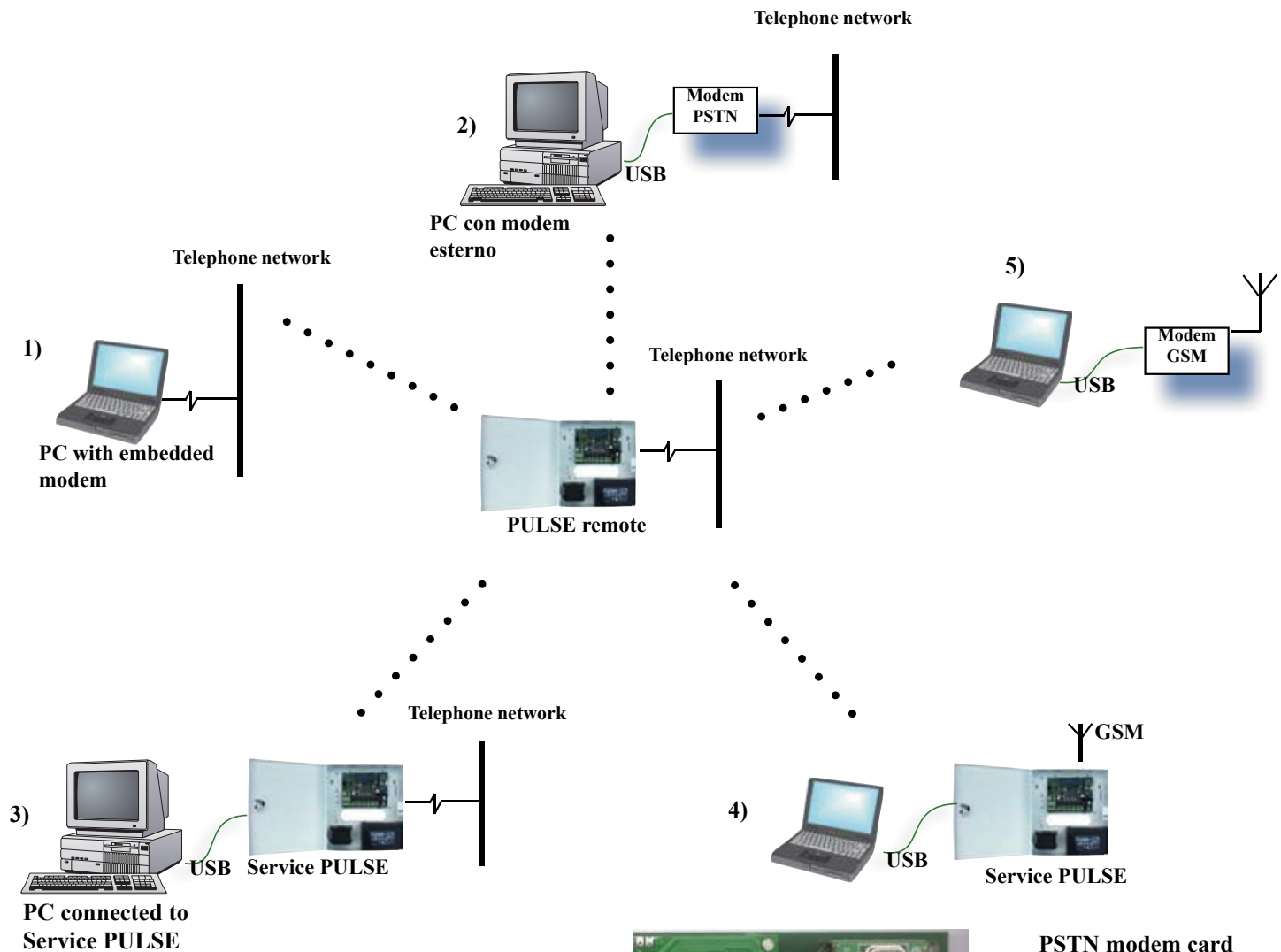
You can access to the Owner menu pushing the button D of the main board or pushing simultaneously the keys A+B of a Master transmitter.



15] MODEM SETTINGS

This appliance is equipped with the proper connectors for the usage of 2 types of modems : GSM e PSTN.
Through the 2 modems it is possible the connection to a remote device, both through the public switched telephone network and through the GSM system
Connection examples:

A) Remote PULSE connected to public switched telephone network



For a public switched telephone network connection plug-in the PSTN modem as shown in fig. 5.
The connection to the line is performed through the connector RJ45.
The parameters for this connection can be set only using the sw running on the PC called : PULSE Site Manager.

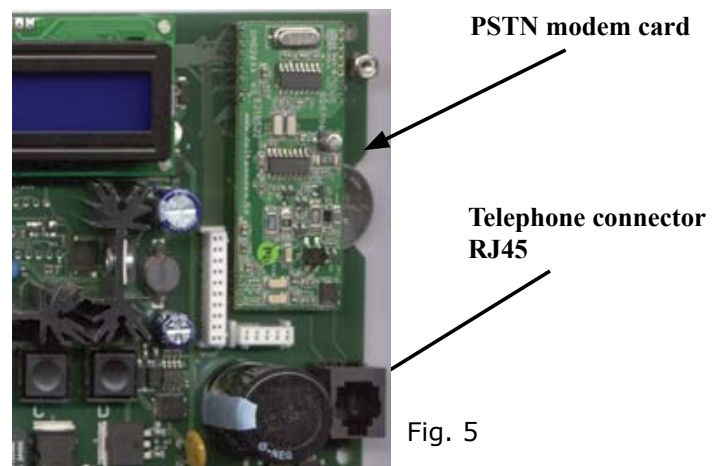
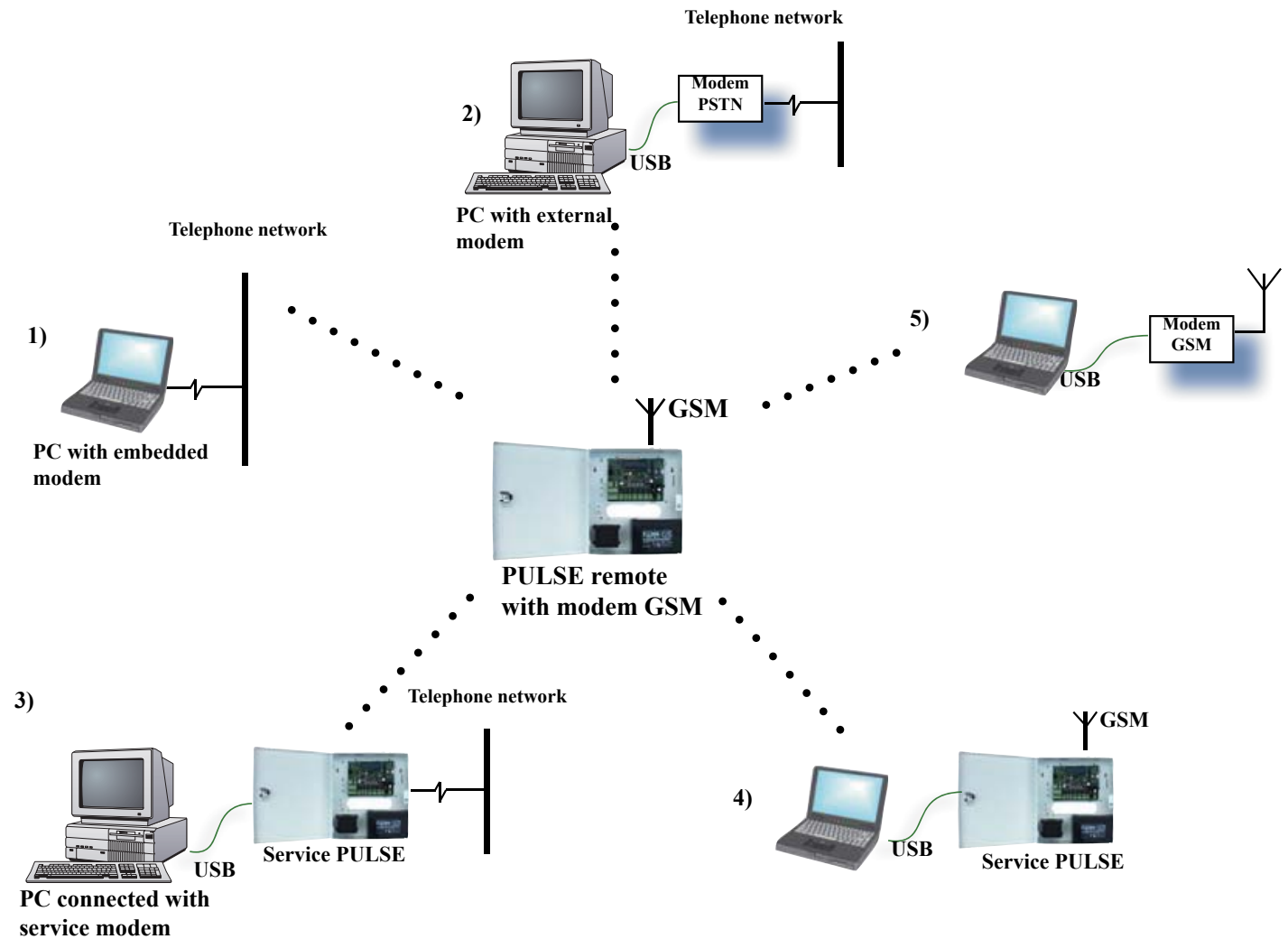


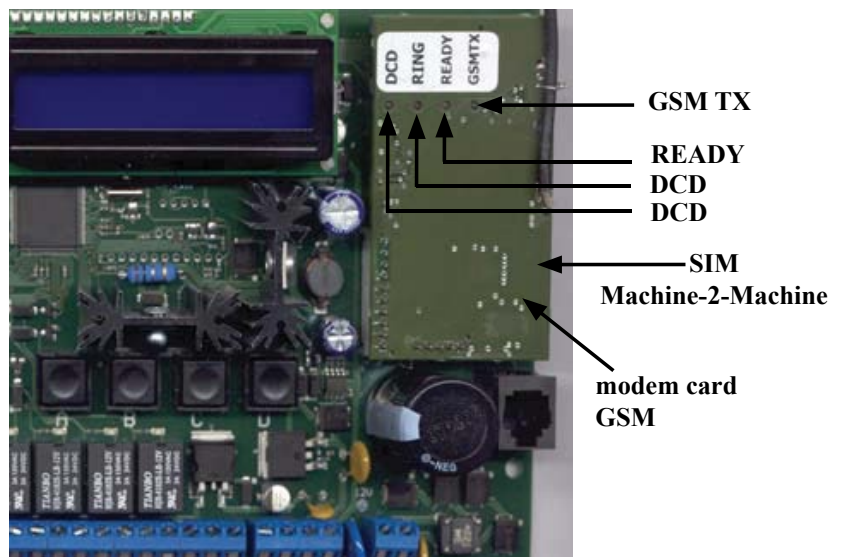
Fig. 5

B) Remote PULSE connected through GSM



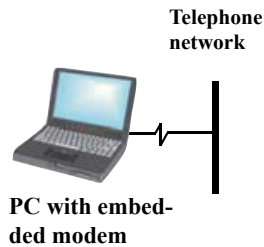
For a GSM connection it is necessary to plug-in on the proper connector the GSM modem, equipped with a SIM Machine-to-Machine or a voice-data SIM enabled for GSM transmission at 960 BAUD.

PULSE is equipped with the connector for an external GSM antenna.

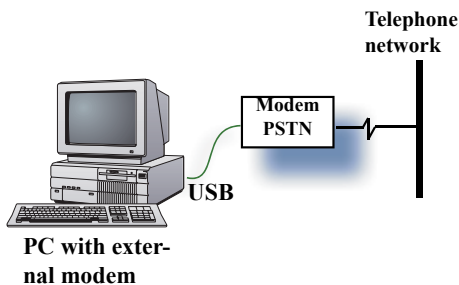


LEGEND MODEM GSM LEDs			
READY		OFF	Modem OFF
		Stable ON	Modem ready
RING		OFF	Modem stand-by or Communication in progress
		Stable ON	Waiting for answer
DCD (Data Carrier Detect)		OFF	Call in progress
		Stable ON	Modem card powered
GSM TX		OFF	No communication with the provider
		Stable ON	RF Activity towards the provider in progress

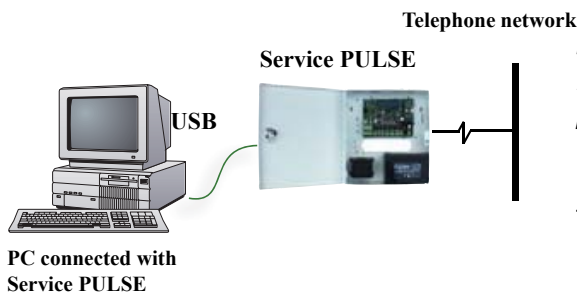
15] MODEM SETTINGS - Follows



1A) : PC with embedded modem connected to PSTN (Public switched telephone network) In this case use the internal PC modem to call the number of the PSTN modem inserted on the remote PULSE. This PULSE must be set to operate in mode NET (See. Menu COM parameters), with the default BAUD RATE (38400) and the address (001 - 064) identical to the one set on the PC.
Use on the PC the sw : «PULSE SITE MANAGER».



2A) : PC with external modem connected to PSTN
See. 1A



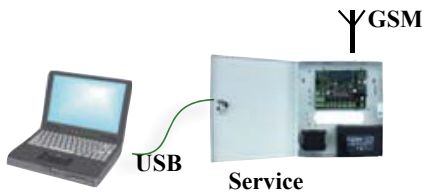
3A) : PC connected to a Service PULSE equipped with a PSTN modem connected to PSTN (Public switched telephone network)

In this case use a Service PULSE equipped with a PSTN modem to call the Remote PULSE.

The Service PULSE is set to operate in mode «MODEM» (see. Menu COM parameters), with the default BAUD RATE (38400).

On the PC use the sw : «PULSE SITE MANAGER».

The Remote PULSE is set to operate in mode NET.



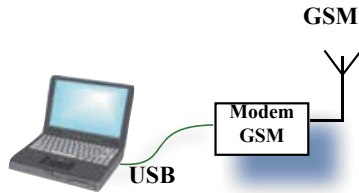
4B) : PC connected by USB to a Service PULSE equipped with a GSM modem

Use the modem of the Service Emu to call the remote PULSE, equipped with a GSM modem.

The Service PULSE is set to operate in mode «MODEM»

On the PC use the sw : «PULSE SITE MANAGER».

The Remote PULSE is set to operate in mode NET.



5B) : PC connected by USB to an external GSM modem

In this case use the external GSM model to call the Remote PULSE through GSM .

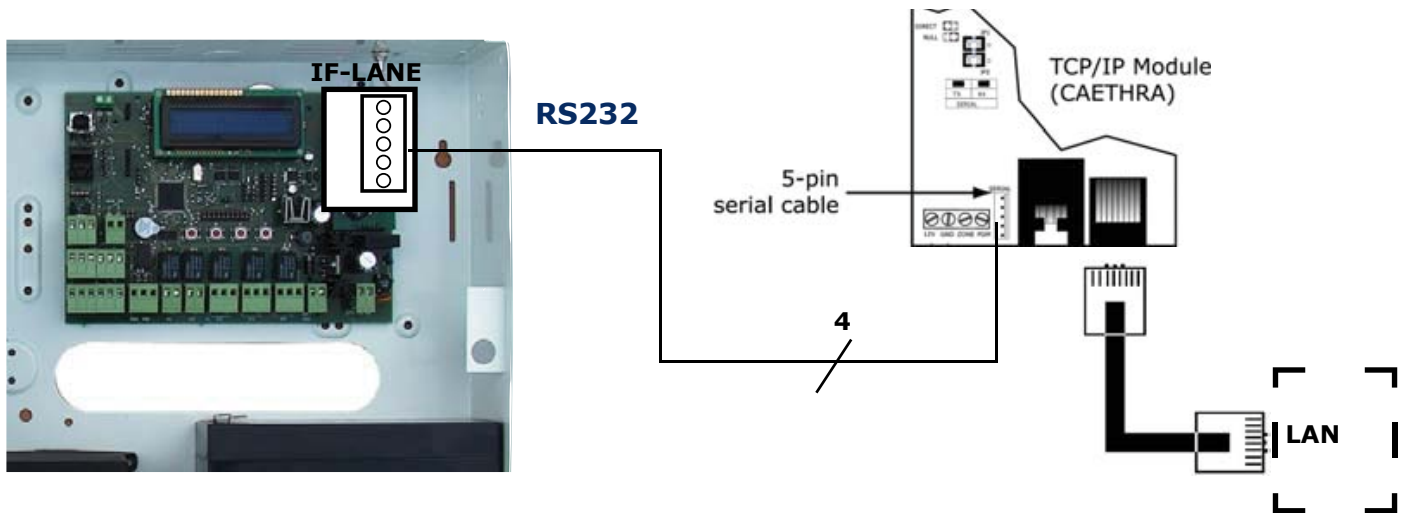
On the PC use the sw : «PULSE SITE MANAGER».

The Remote PULSE is set to operate in mode NET.

16] LAN CONNECTION

PULSE can be connected to a LAN network using an interface card (IF-LANE) to plug-in on the proper connector on the mother board (replacing the modem module) and using a RS232-TCP/IP converter (CAETHRA , see. Accessories PULSE).

Through the module CAETHRA it's possible to connect PULSE to a LAN and in case access via Internet using a Router. The module CAETHRA, possibly, can be replaced by a common equivalent device.



The I/F card IF-LANE allows to connect the serial port of the module the controller PULSE using a 4-wire cable, provided with CAETHRA

Follow the following step for the connection:

- 1) plug-in the interface IF-LANE on the proper connector on PULSE;
- 2) connect the 4-wire cable between IF-LANE and CAETHRA;
- 3) on the **Menu of CONFIG COM**, select the option **LAN** for the parameter **RS232 Mode**;
- 4) Config properly the module CAETHRA --> see next steps.

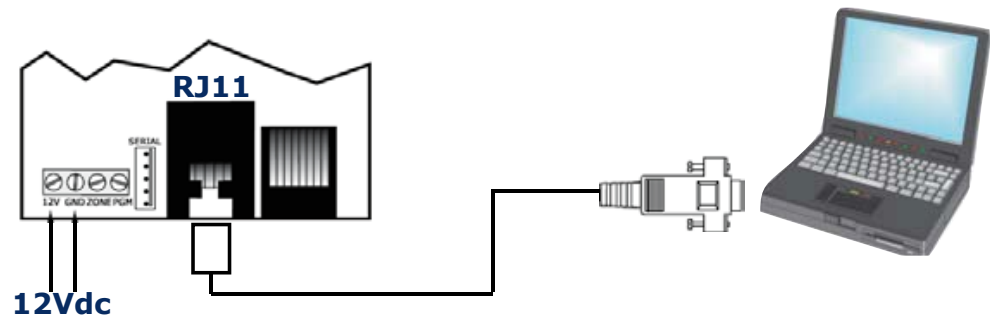
16A] CONFIGURING THE MODULE CAETHRA

The module can be configured by one of two methods:

- Using a commercial serial communication program, such as HyperTerminal, to access the module's serial port
- Using a standard Web browser to access the module's internal Web pages.

ATTENTION : To configure the module through its internal Web pages, you must first set the module's Local IP Address through its serial port.

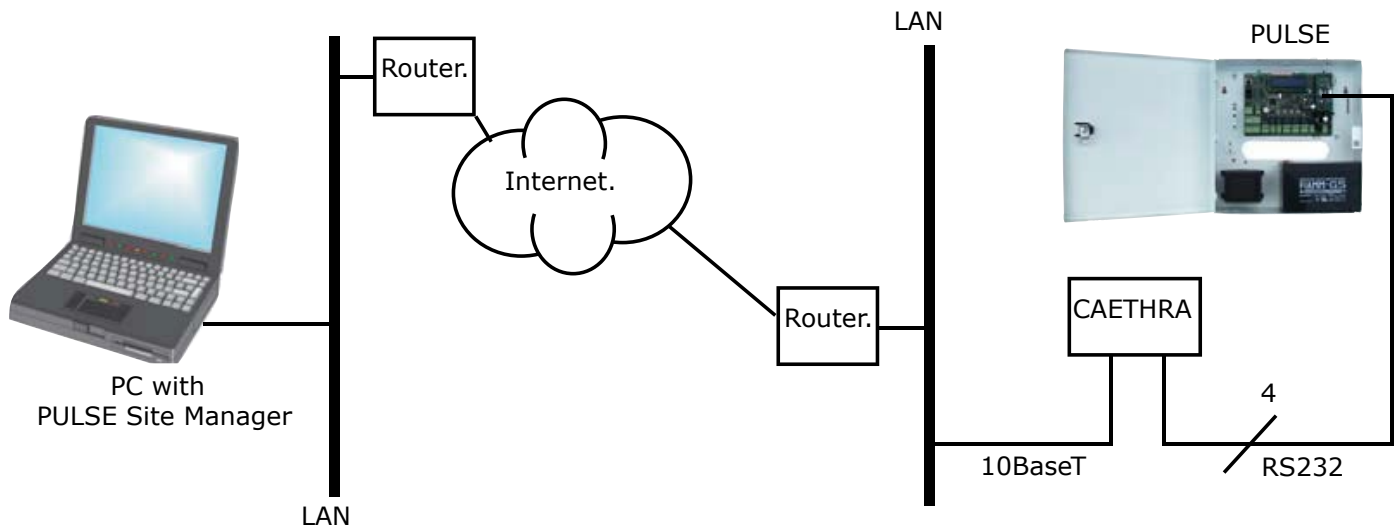
**SEE CAETHRA
INSTALLATION
MANUAL**



- 1) Connect CAETHRA to the serial port of the PC through the connector RJ11 and use the sw Hyperterminal to set the serial communication parameters following the procedure of the manual.
- 2) Once set the serial communication , access to the web pages and set the LAN parameters and the IP address assigned to the module (see CAETHRA manual);
- 3) At the end , through the browser, change the serial port type of the module from **Port 2** --> **Port 1** (with TTL levels) used by PULSE for the serial communication with CAETHRA
In this way PULSE can communicate with CAETHRA through the IF-LANE.

16B] ACCESSING TO PULSE THROUGH INTERNET

Using a module RS232-TCP/IP as CAETHRA and a router it's possible to connect to PULSE via Internet and make all the management of the users data base. The PC should be equipped with the sw PULSE Site Manager



17] NOTE

16.1 INTERNAL CLOCK

The internal clock is powered by a CR2032 lithium battery. The clock is kept always updated on the time and date by the battery but doesn't change automatically for the legal time. The adjustment solar/legal time must be effected manually. The battery replacement must be made with an equivalent type and respecting the polarity: **Battery positive contact upwards.**

17.2 BACKUP BATTERY

The connection to a optional backup battery must be effected using the proper cable, respecting the polarity : **RED = POSITIVE, BLACK = NEGATIVE.**

The battery cable is equipped with a fuse type **T3.15A - 250V.**

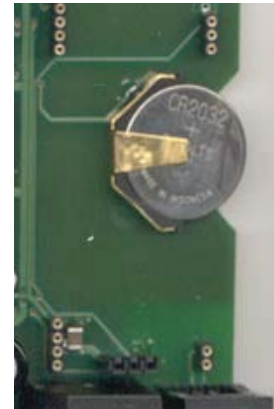


Fig. 8

17.3 FACTORY SETTING RESTORE

It is possible to restore the factory settings (included the Config and Owner password) through the following procedure:

«Give power to the appliance keeping pressed simulteneously the buttons : C+D».

This procedure reset the password to the default value, reset the operation mode of the relays, of the USB port, of the 485 network, the modem settings.

The memory date-base (users and event log) is not deleted.

18] GUARANTEE

The warranty period of Transmitter Solutions Pulse Receiver is 24 months. This warranty shall begin on the date the transmitter is manufactured. During the warranty period, the product will be repaired or replaced (at the sole discretion of Transmitter Solutions) if the product does not operate correctly due to a defective component. This warranty does not extend to (a) the product case, which can be damaged by conditions outside the control of Transmitter Solutions, or (b) battery life of the product. This warranty is further limited by the following disclaimer of warranty and liability:

EXCEPT AS SET FORTH ABOVE, TRANSMITTER SOLUTIONS MAKES NO WARRANTIES REGARDING THE GOODS, EXPRESS OR IMPLIED, INCLUDING WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE. BUYER MAKES NO RELIANCE ON ANY REPRESENTATION OF TRANSMITTER SOLUTIONS, EXPRESS OR IMPLIED, WITH REGARD TO THE GOODS AND ACCEPTS THEM "AS-IS/WHERE-IS". TRANSMITTER SOLUTIONS SELLS THE GOODS TO BUYER ON CONDITION THAT TRANSMITTER SOLUTIONS WILL HAVE NO LIABILITY OF ANY KIND AS A RESULT OF THE SALE. BUYER AGREES THAT TRANSMITTER SOLUTIONS SHALL HAVE NO LIABILITY FOR DAMAGES OF ANY KIND, WHETHER DIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING INJURIES TO PERSONS OR PROPERTY, TO BUYER, ITS EMPLOYEES OR AGENTS, AS A RESULT OF THE SALE. BUYER ALSO AGREES TO HOLD TRANSMITTER SOLUTIONS HARMLESS FROM ANY CLAIMS BUYER, OR ANY THIRD PARTY, MAY HAVE AS A RESULT OF BUYER'S USE OR DISPOSAL OF THE GOODS. BUYER HAS READ THIS DISCLAIMER AND AGREES WITH ITS TERMS IN CONSIDERATION OF RECEIVING THE GOODS.

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